

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Technology Transitions	)	GN Docket No. 13-5
	)	
_____	)	

**REPLY COMMENTS OF  
IOWA NETWORK SERVICES, INC.**

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## **SUMMARY**

Five parties have filed comments in response to INS' Application to conduct a service-based experiment on the TDM-to-IP transition for Centralized Equal Access ("CEA") Service. NTCA and M&D are generally supportive of INS' proposal, while AT&T, CenturyLink, and Sprint question the design and motivation behind INS' experiment. INS' experiment is needed in order to ensure a smooth transition to an all-IP network, and it is not intended to resolve any legal or policy issues associated with the transition from TDM to IP-based services.

The purpose of INS' transition experiment is to study the impact on customers and rural communities as INS' voice communications convert from a CEA network based on TDM circuit switched service to a CEA network using IP technologies. INS' experiment is designed to meet the Commission's conditions and presumptions for service-based IP experiments, and maintain the status quo with respect to competition issues. Contrary to the assertions of AT&T, CenturyLink, and Sprint, INS does not seek to change the regulatory treatment of any of the traffic sent to its CEA network for routing to other carriers. If the traffic would have been treated as CEA traffic subject to intercarrier compensation before the experiment, it will be treated the same way during and after the experiment. Any other action would upset the status quo ante required in the FCC's *Technologies Transition Order*, and could lead to the elimination of common carrier obligations that would adversely impact public safety.

INS' proposed experiment is needed to ensure the smooth transition to IP-based service in rural areas. As noted by NTCA, CEA services have played a vital role in making competitive and advanced services available to consumers living in remote and sparsely populated areas in Iowa, and have made advanced communications services and services available to rural Iowa consumers and competitive service providers that would not otherwise be available but for INS' network. Furthermore, INS' CEA network is critical to connecting rural communities to other carriers because the construction and transport costs necessary to link widely dispersed rural consumers to a small number of distant points of interconnection are unaffordable for competitive service providers. M&D cites several examples of catastrophic service outages resulting from the introduction of new technologies, which demonstrates the need for INS' experiment to identify any points of failure or service quality issues that could arise in implementing an all-IP network.

INS' proposed experiment is completely voluntary, and will collect data to further inform the transition to an all-IP based network. Different services and facilities are likely to present various technical challenges that the experiment will seek to resolve. While timing of the experiment will depend on the availability of third party volunteers, a rough estimate of the completion of each phase is as follows: Phase I by end of Q2 2014; Phase II by the end of Q4 2014; Phase III by the end of Q1 2015.

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Iowa Network Services, Inc. (“INS”) hereby submits its reply in the above-captioned proceeding to the comments filed by AT&T Services, Inc. (“AT&T”), CenturyLink, Sprint Corporation (“Sprint”), NTCA – The Rural Broadband Association (“NTCA”), and Marshlian & Donahue, LLC (“M&D”). As further detailed below, while NTCA and M&D’s comments are generally supportive of INS’ proposal, AT&T, CenturyLink, and Sprint question the fundamental design and motivation behind INS’s proposed experiment on the TDM-to-IP transition for Centralized Equal Access (“CEA”) Service. The arguments raised by AT&T, CenturyLink, and Sprint are without merit, and the Commission should grant INS’ Application. In support hereof, the following is respectfully shown:

- I. AT&T, CenturyLink, and Sprint Raise Issues That are Beyond the Limited Scope and Purpose of the Commission’s Framework for Service-Based Experiments.**
  - A. INS’ Proposal Will Not Change the Current Regulatory Treatment of Services or Participants in the Experiment.**

As the Commission stated in its *Technology Transitions Order*,<sup>1</sup> the over-arching purpose of service-based experiments, such as that proposed by INS, “is to speed technological advances by preserving the positive attributes of network services that customers have come to expect.”<sup>2</sup>

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<sup>1</sup> *In re Technology Transitions et al.*, Order, Report and Order, and Further Notice of Proposed Rulemaking, GN Docket No. 13-5, FCC 14-5 (rel. Jan 31, 2014) (“*Technology Transitions Order*”).

<sup>2</sup> *Id.* ¶ 23 (citations omitted).

Service-based experiments are those in which “providers seek to substitute new communications technologies for the TDM-based services over copper lines that they currently are providing to customers, with an eye toward discontinuing those legacy services and in which others may propose new and innovative services that bring benefits to consumers while preserving the enduring values of our nation’s communications networks.”<sup>3</sup> The FCC fully recognized that there are a myriad of legal and policy questions raised by technology transitions, and the Commission emphasized that the “service-based experiments are not intended to resolve legal or policy debates.”<sup>4</sup> Rather, they are intended to “create arenas of innovation where providers and their competitors, and the customers of each, are free to explore a variety of approaches to resolving any operational challenges that result from transitioning to new technology and that may impact users.”<sup>5</sup>

As explained in further detail in INS’ Application, the purpose of INS’s TDM-to-IP transition experiment for its CEA service is to study the impact on customers and rural communities as INS’ voice communications convert from a CEA network based on TDM circuit switched service to a CEA network using new IP technologies.<sup>6</sup> As required by the *Technology Transitions Order*, INS designed its experiment to ensure that it will meet the value-based conditions and presumptions established by the Commission, and maintain the status quo with respect to competitive issues, including the maintenance of wholesale access, interconnection, and intercarrier compensation.

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<sup>3</sup> *Id.* ¶ 22.

<sup>4</sup> *Id.* ¶ 25.

<sup>5</sup> *Id.*

<sup>6</sup> INS Application at 4.

Nevertheless, AT&T and CenturyLink allege that INS' Application assumes the resolution of a number of policy issues that are currently before the Commission, or that will need to be addressed as the PSTN moves to an all-IP network. For example, CenturyLink asserts that INS' proposal does not maintain the intercarrier compensation status quo ante, and also seeks to extend the regulatory requirement of equal access to the all-IP network.<sup>7</sup> Similarly, AT&T avers that including equal access functionality in INS' experiment will impose equal access obligations on an all-IP environment.<sup>8</sup> Those arguments are without merit.

As the Commission repeatedly stressed in the *Technology Transitions Order*, service-based experiments are to evaluate the impact of technology transitions on end users. They are not intended to, nor can they, resolve any larger legal or policy issues associated with using an IP connection rather than a traditional TDM circuit. The FCC stated that it would presume that “applicants will maintain the status quo ante in their experimental arenas in accordance with the Commission’s *USF/ICC Transformation Order* . . . .”<sup>9</sup> The term “status quo ante” literally means “the way things were before.”<sup>10</sup> In the instant situation, INS does not seek to change the regulatory treatment of any of the traffic sent to its CEA network for routing to other carriers. If the traffic would have been treated as CEA traffic subject to intercarrier compensation before the experiment, it will be treated the same way during and after the experiment. Pursuant to the

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<sup>7</sup> CenturyLink Comments at 6.

<sup>8</sup> AT&T Comments at 3-4.

<sup>9</sup> *Technology Transformation Order* ¶ 36.

<sup>10</sup> The term “status quo ante” “is a rather elegant piece of Latin which means the last existing state of peaceable, noncontested conditions which preceded the pending controversy” *Religious Technology Ctr. v. F.A.C.T.NET, Inc.*, 901 F. Supp. 1519 (D. Colo. 1995).

FCC's *USF/ICC Transformation Order*, INS is required to charge the same CEA tariff rate for both VoIP traffic as it does for TDM traffic that it transports over its network.<sup>11</sup>

Indeed, it is AT&T and CenturyLink that seek to upset the status quo ante by asserting that the limited experimental conversion from TDM to all IP-based technology requires different legal and regulatory treatment once the experiment commences. For example, AT&T posits that if the experiment involves a LEC, that LEC would not be providing VoIP service as a common carrier, and it would no longer be subject to the dialing parity requirement in Section 251(b)(3). That argument is specious, and would lead to absurd results. Taken to its extreme, AT&T's argument would mean, for example, that the use of IP technology would eliminate the common carrier obligation of a LEC to support 911 access. The FCC's requirement that experiments maintain the status quo ante precludes such a result. If a participating LEC was a common carrier before the experiment, the services it provides would be subject to the same regulatory obligations during and after the experiment. While beyond the scope of this proceeding, INS believes that all common carrier obligations should continue to apply to all LECs, regardless of the technology employed, or the location at which that technology is used.<sup>12</sup>

The purpose of INS' proposal is not to change the regulatory treatment of the traffic or the status and obligations of the carriers participating in the experiment. Rather, the purpose is to study the potential impact of technological transitions on end users. INS' experiment is neutral with regard to legal and policy issues, and is only aimed at collecting performance data related to

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<sup>11</sup> *Connect America Fund; A National Broadband Plan for Our Future; Establishing Just and Reasonable Rates for Local Exchange Carriers; High-Cost Universal Service Support; Developing an Unified Intercarrier Compensation Regime; Federal-State Joint Board on Universal Service; Lifeline and Link-Up; Universal Service Reform – Mobility Fund*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, 18002-28, ¶¶ 933-71 (2011) (*USF/ICC Transformation Order*), *pets. for review pending sub nom. In re FCC 11-161*, No. 11-9900 (10th Cir. filed Dec. 8, 2011).

<sup>12</sup> Even in an all ENUM IP environment, there remains a switching element that must conform to a LEC's obligation to meet requirements for E911, and to manage outages related to circuit disruptions. The reliability and performance standards required by state and federal regulators should not be abandoned in the transition to an all-IP network.

the use of IP technology for transporting voice communications. The use of an IP access tandem may not be a requirement in an all-IP environment. However, as long as there is a choice of long distance providers by a customer,<sup>13</sup> there will always be some intermediate IP switching function required. Until ENUM<sup>14</sup> becomes a universal reality, there will always be some intermediate point of switching, unless customers no longer have a choice of selecting a long distance carrier independent of their local exchange service provider. While CEA is just one way of providing equal access for long distance, AT&T is clearly lobbying for equal access to be eliminated for consumers. As explained in INS' Application, CEA service is a vital service needed for rural customers in Iowa to continue receiving advanced communications services, whether they be provided over a TDM or IP platform. Should the FCC later determine that different regulatory treatment is required for traffic in an all-IP environment, those obligations would attach at that time.<sup>15</sup>

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<sup>13</sup> While INS' CEA network will enable consumers to retain their choice of long distance carriers, regardless of whether such services are TDM or IP based, AT&T's proposed transition to all-IP services will eliminate the ability for customers to make dial-around 10XXX calls using the long distance carrier of their choice. *See AT&T Ex Parte Letter* at 7 (response to Question 14), GN Docket Nos. 13-15 and 12-353 (dated Mar. 26, 2014).

<sup>14</sup> *See Technology Transitions Order*, n.261 for an explanation of the ENUM solution. ENUM raises a plethora of other legal and policy issues. For example, the term "exchange" may need some new or additional interpretation to deal with the geographic significance of E.164 telephone numbers. Whether the local exchange point of switching resides locally or at some distance away in a cloud, the value of having geographic relationships with the assignment of telephone numbers should be an item for consideration by the FCC, as it could impact the operations of many businesses in the United States.

<sup>15</sup> AT&T also suggests that the FCC may not even have authority to approve INS' Applications because there is a supposed "foundational problem with the concept of a Commission-sponsored IP interconnection trial – specifically, the notion of conducting a trial in a subject area over which the Commission's authority is, at best, uncertain." There is no "foundational problem" as asserted by AT&T. There is no question that INS is a common carrier that is subject to the FCC's jurisdiction, and any changes to INS' network that may have an adverse impact on end users and the public safety are clearly subject to Commission oversight. Moreover, although IP services are involved in the INS' proposal, that does not automatically remove the experiment from the FCC's purview. The FCC has, for example, determined that wireline broadband services, which involve IP communications and telecommunications services, are jurisdictionally interstate, and subject to FCC jurisdiction. *See, e.g., Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities et al.*, Report and Order, 20 FCC Rcd 14853 (2005). Indeed, it was AT&T that asked the Commission to commence this proceeding and invoke its jurisdiction to approve IP experiments.



It is important to note that INS is seeking voluntary participation of VoIP providers, LECs, IXC's, and end users in its experiment. Neither AT&T nor CenturyLink is required to participate in INS' trial if they are concerned that they will be adversely impacted by the experiment. AT&T expressed its "hope and expectation" that "proposed trials will provide the Commission, AT&T and other stakeholders with valuable information . . . in a way that is faithful to the enduring social values – ensuring universal connectivity, consumer protection, public safety, reliability and competition . . . ."<sup>16</sup> INS also shares these goals. INS' service-based experiment is designed to provide additional insight to further inform the transition to all-IP services, and INS welcomes AT&T and other volunteers willing to participate in INS' trials.

**B. INS' CEA Service is Relevant and Necessary in an All-IP Environment.**

AT&T, CenturyLink, and Sprint question whether CEA is relevant in an all-IP world, and whether INS' experiment is even necessary given that IP technology is used in telecommunications today. Sprint even goes so far as to state that INS holds a monopoly for the aggregation and transport of voice traffic.<sup>17</sup> INS does not have a monopoly on transport services in Iowa. As discussed in its Application, INS' fiber optic network aggregates traffic through one or more convenient points of interconnection, and provides efficiencies and cost savings for all types of communications companies that seek to compete and provide service in rural areas.<sup>18</sup> To increase choice for Iowa consumers, the service providers selected by those end users, whether they are wireless or wireline,<sup>19</sup> are permitted today to make the competitive choice of

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<sup>16</sup> AT&T Comments at 2.

<sup>17</sup> Sprint Comments at 3.

<sup>18</sup> INS Application at 2-3. AT&T further argues that an all-IP equal access network would be prohibitively expensive and at odds with the "any distance" nature of IP services. AT&T Comments at 3. This statement conflicts with the premise that IP technology offers lower cost means for delivering service.

<sup>19</sup> AT&T identifies CMRS traffic as an example of how intercarrier compensation differs depending upon the type of service provided. However, AT&T's suggestion that intercarrier compensation for CMRS traffic is somehow

whether or not they will take advantage of INS' CEA traffic aggregation services, and enter into an interconnection and traffic agreement with INS. In INS' proposal, IP CEA is a service offered to common carriers, offering to connect LECs and IXC's using IP infrastructure without changing the traditional safety net of services offered to consumers. This is not an attempt to foist CEA upon broadband-based VoIP providers to the extent they are exempt from common carrier regulation. Nothing proposed in the IP experiment application would interfere with the Iowa end user ultimately deciding whether IP traffic will be aggregated by the IP CEA network.

NTCA, which is well-versed in the challenges faced by its members in bringing advanced telecommunications services in rural areas, notes that CEA services have played a vital role in making competitive and advanced services available to consumers living in remote and sparsely populated areas in Iowa.<sup>20</sup> In many sparsely-populated rural areas, the ability to connect to competitive carriers through a CEA service provider is necessary for the provision of affordable services.<sup>21</sup> Moreover, the redundancy built into the INS' fiber ring network with dual switches avoids single points of failure in remote locations, and ensures reliability that help protect rural customers from being isolated from the outside world.<sup>22</sup> These advances and safeguards would not be available to rural Iowa consumers and competitive service providers, but for INS' network.

INS' network is critical to ensuring that all traffic – whether TDM or IP-based – flows reliably to and from rural areas. However, in AT&T's view, CEA services are superfluous because IP interconnection will take place on a nationwide basis, and at a relatively small

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markedly different than that for wireline traffic is wrong. CMRS carriers compensate INS for their use of INS' network based on the volume of traffic, and it is not on a bill-and-keep basis.

<sup>20</sup> NTC Comments at 3.

<sup>21</sup> *Id.*

<sup>22</sup> *Id.*

number of locations.<sup>23</sup> Sprint advocates a similar view in stating that data networks “exchange traffic at a handful of ‘carrier hotels’”, and “are vastly more efficient than” traditional TDM networks.<sup>24</sup> However, these visions of the new all-IP world ignore the realities and challenges faced by rural customers. The construction and transport costs necessary to connect widely dispersed rural consumers to a small number of distant points of interconnection/carrier hotels are unaffordable for competitive service providers. They simply do not have access to the deep capital resources or the large customer bases available to large Tier 1 carriers, such as AT&T, CenturyLink, and Sprint, to undertake the burdensome task of building out extensive network facilities to transport traffic to out-of-state points of interconnection. As astutely noted by NTCA:

[M]igrating to just a handful of interconnection points nationwide would undermine the benefits of CEA networks and could impose significant, new costs on smaller carriers forced to deliver traffic to points of interconnection perhaps *several hundred miles or more* outside their service areas if the financial responsibility for these extended transport routes is transferred from interexchange carriers to rural carriers and their customers. Arguments of this sort confuse the “efficiency” of IP-enabled services with the notion that underlying networks somehow become costless (or “free”) in an IP-enabled world. Routing and transport costs associated with hauling traffic from western Nebraska to Denver, from Des Moines to Chicago, or from South Dakota to Seattle do not disappear simply because the traffic in question may happen to be formatted in IP.<sup>25</sup>

AT&T appears to want to stifle competition by demanding the best of both worlds.

Indeed, AT&T’s vision for IP-based services contemplates interconnection arrangements being

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<sup>23</sup> See AT&T *Ex Parte* Letter, GN Docket No. 13-5, WC Docket No. 13-97; WC Docket No. 10-90 at 1 (filed Jan. 24, 2014). AT&T also contends a geographically limited trial makes little sense “because interconnection arrangements in an all-IP world will not be based around LATA (or even state) boundaries, and will not respect artificial distinctions between ‘local’ and ‘long distance’ services, and are highly unlikely to be limited to ‘voice[]’ . . . .” AT&T Comments at 5. With the voluntary participation of other carriers, there does not have to be any geographic limitation with the proposed experiment. However, it is important to note that every experiment proposed has some geographic limitation, or else they would ostensibly include every customer in the nation.

<sup>24</sup> Sprint Comments at 1-2.

<sup>25</sup> NTCA Comments at 8 (emphasis original).

established between parties through commercial negotiations, rather than mandatory interconnection negotiations through the Section 251/252 process contained in the Communications Act.<sup>26</sup> As industry experience has shown, parties with significant market power, absent regulatory oversight, are quick to adopt practices that promote their own advantage, while slow to negotiate in good faith with competitors that threaten their market dominance. By saddling smaller carriers and new entrants with the costs of transporting traffic to AT&T's geographic interconnection points for the exchange of traffic, AT&T avoids paying any intercarrier compensation, while at the same time, AT&T reaps the benefits of charging Netflix's end users for terminating traffic to AT&T's IP end users.<sup>27</sup> INS' CEA network is essential and necessary to ensure that rural customers are not disenfranchised by a handful of large dominant carriers, and continue to receive necessary and affordable voice and data services before and after the conversion from TDM to IP-based services.

INS' experiment is also necessary to ensure that the transition to IP-only based services do not adversely impact essential services. The transition of the national network from TDM to IP-only services will not be a sudden, flash cut event. For the industry that is made up of numerous carriers with varying degrees of technical and financial resources, a flash cut is neither likely nor practical. Experiments such as the one proposed by INS will help to identify technical and practical challenges that need to be overcome for that transition, including the identification of standards issues that must be addressed. One of the primary goals of the INS experiment is to collect performance data that may be useful in creating needed standards. As AT&T points out, the development of standards is important work that should be completed by industry

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<sup>26</sup> 47 U.S.C. §§ 251, 252; AT&T Comments at 6.

<sup>27</sup> See, e.g., Marina Lopes, *AT&T Rejects Netflix Call for Free Interconnection as Unfair*, Reuters Mar. 21, 2014 (avail. at <http://www.reuters.com/article/2014/03/21/us-netflix-att-internet-idUSBREA2K20O20140321>, last viewed Mar. 27, 2014).

stakeholders.<sup>28</sup> Performance data should be collected from multiple participants, across multiple infrastructures, to help form the development of those standards. Although IP-based services are not “experimental” *per se*,<sup>29</sup> the use of end-to-end IP-based services for critical communications is novel for the very rural areas served by INS’ subtending LECs.

Furthermore, M&D observes that most small and rural carriers simply cannot afford to test IP technology,<sup>30</sup> and therefore, they will rely on carriers such as INS in order to assist with the transition to IP-based services and with the exchange of traffic with other carriers. INS agrees with M&D’s assertions that a full end-to-end experiment is needed to reduce the risk of network failure and harm to the public that resides in rural America.<sup>31</sup> In its comments, M&D recounts several examples where the introduction of new technologies resulted in catastrophic service outages affecting millions of customers. In order to avoid similar occurrences, INS’ experiment seeks to identify any points of failure or service quality issues that could arise in implementing an all-IP network.

## **II. Submission of Further Information Regarding INS’ Proposed Experiment**

AT&T and CenturyLink question whether INS’ proposal provides sufficient details to permit the FCC to grant INS’ application. Specifically, they contend that INS does not provide specific information regarding the timing of the three phases of the experiment, the geographic scope of the trial, and whether the experiment will in fact, be voluntary.<sup>32</sup> As stated in INS’ application, the IP CEA experiment will be completely voluntary for existing customers.<sup>33</sup> The

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<sup>28</sup> AT&T Comments at 5 (“the important work of establishing those standards is still underway in *fora* in which stakeholders from across the industry, including AT&T, are actively participating”).

<sup>29</sup> NTCA Comments at 5.

<sup>30</sup> M&D Comments at 6.

<sup>31</sup> *Id.* at 6-9.

<sup>32</sup> AT&T Comments at 8; CenturyLink Comments at 7.

<sup>33</sup> INS Application at 8-9.

solicitation of existing customers to participate in the experiment is an important aspect of the trial design as it is intended to identify technology transition issues.

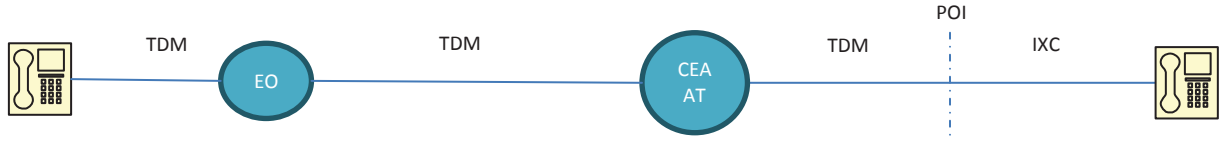
Testing will be based on the premise that measurement data must traverse the switched voice network. To that end, it assumes testing a series of calls from an originating telephone number to a terminating telephone number. The telephone numbers can be any E.164 addresses that will enable test calls to traverse the appropriate network portions included in the experiment. The initial method of testing will utilize a test set, such as the Sage 935, which can measure Mean Opinion Score (MOS) originating or terminating from either analog phone service (POTS) or from a VoIP line. The results from a typical test using the Sage 935AT test set provides the following:

```
----- SMOS REPORT -----  
DURATION:      9s  
SEND TLP:  +0.0          RECV TLP:  +0.0  
  
NF_MOS: 4.56           FN_MOS: 4.55  
NF_NOISE: 24dBrc       FN_NOISE: 24dBrc  
NF_+FS: 0mS           FN_+FS: 0mS  
NF_-FS: 0mS           FN_-FS: 0mS  
NF_BW: 99.0%          FN_BW: 98.5%  
NF_GAIN: +0dB          FN_GAIN: +0dB  
NF_CODEC: PCM          FN_CODEC: PCM  
DELAY: 0.0mS
```

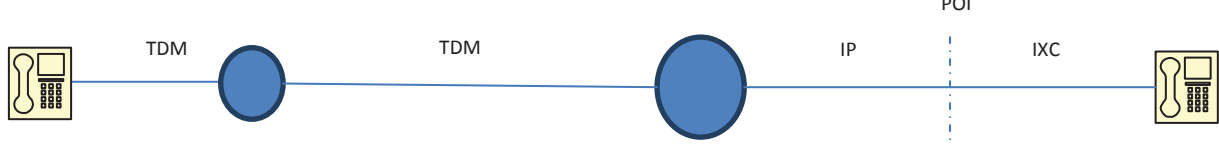
The following diagrams illustrate the method of testing through different phases of the experiment:

## Test Connections by Project Phase

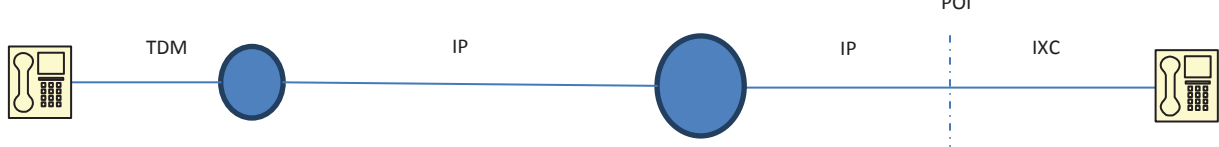
Baseline



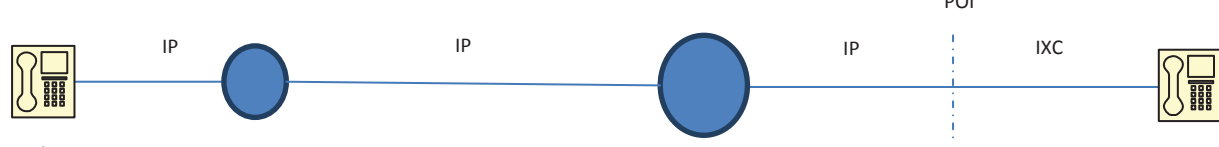
Phase 1



Phase 2



Phase 3



↑  
Originating  
Telephone #

↑  
Terminating  
Telephone #

With regard to timing, INS is unable at this time to provide concrete dates due to the voluntary nature of the experiment. Timing will depend upon INS' success in obtaining the voluntary participation by other service providers and end users. The technical characteristics of the facilities and services of each competitive IP service provider that volunteers to participate in the experiment will also affect the timing of the experiment. Different services and facilities are

likely to present different technical challenges that the experiment will seek to resolve.

However, INS anticipates that a rough timing to conduct the experiment would be as follows:<sup>34</sup>

Phase I (voluntary IP interconnection by other carriers):	By end of Q2 2014
Phase II (all-IP transport between IXC's and LEC's):	By end of Q4 2014
Phase III (test of all-IP services with end users):	By end of Q1 2015

The experiment will involve INS' tandem switches located in Des Moines and Kamrar, Iowa. While INS' fiber optic network covers most of Iowa, and therefore is statewide, the experiment will be limited to a few rural Iowa communities that volunteer to participate. The exact geographic scope of the experiment will depend on the volunteers participating in the trial, and INS is unable to provide any more specific information until it is able to obtain the agreement of other service providers and their end users to participate in the experiment.

### **III. Conclusion**

Wherefore, for the foregoing reasons, INS respectfully requests that the Commission grant its application to conduct a service-based experiment concerning the TDM-to-IP transition for CEA service.

Respectfully submitted,



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Date: March 31, 2014

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<sup>34</sup> As stated above, this timing is subject to change due to the necessary involvement of third-party volunteers. Unlike AT&T, INS does not have end-to-end control over the network facilities needed for a successful trial. The various phases of the experiment can occur in a different order depending on the availability of willing participants.